RTD UPDATES: Tillage Systems

Data updates for employees and colleagues of the Resources and Technology Division

Resources and Technology Division
Economic Research Service
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Field Crop Surveys Provide Cropping Practices Data

The annual Cropping Practices Surveys are USDA's primary information source for developing estimates of chemical use on field crops. In addition to fertilizer and pesticide information, these surveys include questions about tillage, irrigation, nutrient tests, use of livestock manure, plant density, and other applied management practices. These data support a wide range of research on policies related to pesticide use in agriculture and their impacts on the environment and the safety of our food supply.

This issue of **RTD UPDATES** briefly summarizes cropping practices by tillage system for wheat, corn, soybeans, grain sorghum, and cotton. The treatment of previous crop residues and preparation of seedbeds are important not only in providing a suitable environment for seed germination and plant growth, but also in affecting how nutrients or pesticides may leach through the soil or leave cropland through runoff or soil erosion.

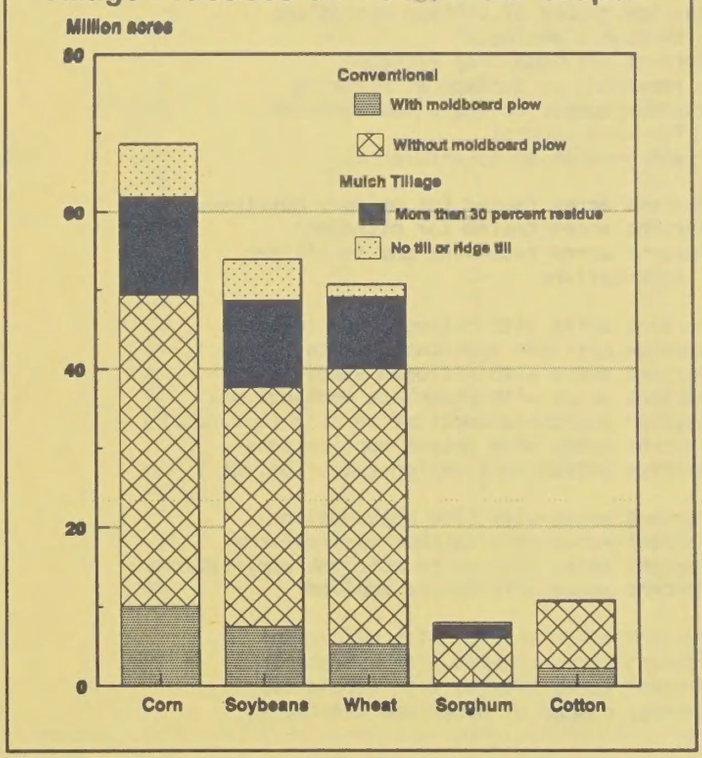
The table reports the frequency of nutrient applications, pesticide treatments, tillage trips, and residue for four general tillage classes. The 1991 statewide survey results reported here represent about 90 percent of the U.S. corn and soybean acreage and 75 percent of the wheat, sorghum and cotton acreage. Additional information from these surveys are reported in **Agricultural Chemical Usage, 1991 Field Crops Summary**, AgCh1(92), Nat'l. Agr. Stat. Serv., U.S. Dept. Agr., Mar. 1992, **Agricultural Resources: Inputs Situation and Outlook**, AR-25, Econ. Res. Serv., U.S. Dept. Agr., Feb., 1992, and in the May issue of **RTD UPDATES**.

Information: Merritt Padgitt, RTD (202)219-0434.

Monthly Data Releases Planned

RTD UPDATES, published by the Resources and Technology Division, is a new series of monthly data highlights relating to agricultural resources, the environment, food safety, global change, and technology. Surveys of farm operators and others knowledgeable about changing agricultural resource conditions provide vital information to the RTD research program and are the source of these data highlights. **RTD UPDATES** gives readers recent data acquisitions, with only minimal interpretation or analysis. This quick release of data should enhance your analytical efforts and decisions. Please contact the individual listed in the text of **RTD UPDATES** on the availability and timing of additional information. Different resource and technology issues are featured each month, depending on availability of data.

Tillage Practices on 1991 Field Crops



Cropping practices used on major field crops by tillage system, 1991 1/

Data item	Conventional with moldboard plow	Conventional without moldboard plow	Mulch >30% residue	Ridge and no-till systems	Total
Corn:					
Planted acres (1,000)	10,096	39,237	12,671	6,526	68,530
Percent acres irrigated	5	14	16	23	14
Average number of tillage operations through planting	3.97	3.53	2.57	1.22	3.20
Percent of previous crop residue remaining on surface at planting	1	15	38	64	22
Average number of field cultivations for weed control	.88	.91	.84	.58	.86
Plant population (plants/acre)	22,500	22,854	22,557	21,879	22,639
Percent acres tested for primary nutrients	33	42	45	45	41
Percent acres tested for nitrogen	18	26	27	45	21
Percent acres receiving any fertilizer applications	93	97	98	98	96
Percent acres with nitrogen applications	93	96	97	98	96
Average nitrogen application rate (lbs/ac)	104	133	131	132	128
Percent acres using a nitrogen stabilizer	8	9	10	9	9
Percent acres with phosphate applications	84	82	78	79	81
Average phosphate application rate (lbs/ac.)	56	62	59	58	60
Percent acres with potash applications	79	72	67	63	71
Average potash application rate (lbs/ac.)	75	83	78	80	80
Percent acres with lime applications	6	6	3	4	5
Percent acres with sulphur applications	7	10	12	14	10
Percent acres with micro nutrient applications	10	10	12	16	11
Percent acres with manure applied	35	15	17	9	18
Percent acres treated with herbicides	89	94	97	96	94
Percent acres treated with insecticides	23	29	35	31	29
Percent acres treated with fungicides	0	0	0	0	0
Average number of pesticide treatments	1.37	1.63	1.76	1.75	1.63
Soybeans:					
Planted acres (1,000)	7,567	30,241	11,090	5,052	53,950
Percent acres irrigated	1	8	5	3	6
Average number of tillage operations through planting	4.29	4.26	3.20	1.06	3.74
Percent previous crop residue remaining on surface at planting	2	14	38	71	23
Average number of field cultivations for weed control	1.09	1.02	.89	.31	.94
Plant population (plants/acre)	126,086	113,158	125,245	139,862	119,879
Percent acres tested for primary nutrients	27	27	30	27	28
Percent acres tested for nitrogen	14	17	18	11	16
Percent acres receiving any fertilizer applications	24	30	22	31	27
Percent acres with nitrogen applications	15	17	13	16	16
Average nitrogen application rate (lb/ac.)	31	22	24	37	25
Percent acres with nitrogen Stabilizer	*	*	*	*	*
Percent acres with phosphate applications	19	24	16	24	22
Average phosphate application rate (lbs./ac.)	51	45	45	56	47
Percent acres with potash applications	21	26	16	26	23
Average potash application rate (lbs./ac.)	84	74	73	82	76
Percent acres with lime applications	3	5	3	6	4
Percent acres with sulphur applications	*	1	1	2	1
Percent acres with micro nutrient applications	2	2	2	1	2
Percent acres with manure applied	9	4	6	4	5
Percent acres treated with herbicides	95	95	98	96	96
Percent acres treated with insecticides	2	3	*	2	2
Percent acres treated with fungicides	*	*	*	*	*
Average number of pesticide treatments	1.41	1.48	1.54	1.67	1.50

Cropping practices used on major field crops by tillage system, 1991--continued

Data item	Conventional with moldboard plow	Conventional without moldboard plow	Mulch >30% residue	Ridge and no-till systems	Total
Grain Sorghum:					
Planted acres (1,000)	398	5,645	1,682	325	8,050
Average number of tillage operation through planting	6.2	4.9	3.3	1.1	4.5
Percent of previous crop residue remaining on surface at planting	1	10	40	69	18
Average number of field cultivations for weed control	2.19	1.33	.60	.5	1.18
Percent acres tested for primary nutrient	17	20	20	28	20
Percent acres tested for nitrogen	14	20	18	28	19
Percent acres receiving any fertilizer applications	72	86	18	28	19
Percent acres treated with nitrogen	72	86	86	87	86
Average nitrogen application rate (lb./ac.)	71	81	70	50	77
Percent acres using a nitrogen stabilizer	0	*	0	0	*
Percent acres treated with phosphate	45	46	36	28	43
Average phosphate application rate (lb./ac.)	27	35	33	18	34
Percent acres treated with potash	9	13	5	4	11
Average potash application rate (lb./ac.)	16	10	15	3	22
Percent acres with lime applications	0	1	*	0	*
Percent acres with sulphur applications	3	16	3	4	6
Percent acres with micro nutrient applications	0	*	5	7	5
Percent acres with manure applied	0	*	5	0	4
Percent acres treated with herbicides	66	76	84	96	78
Percent acres treated with insecticides	21	20	6	11	16
Percent acres treated with fungicides	0	0	0	0	0
Average number of pesticide treatments	.98	1.10	1.11	1.70	1.12
All Wheat:					
Planted acres (1,000)	5306	34,697	9216	1,461	50,680
Percent acres irrigated	6	7	4	6	6
Average number of tillage operations through planting	5.2	4.76	3.22	1.41	4.43
Percent of previous crop residue remaining on surface at planting	1	14	40	58	19
Average number of field cultivations for weed control	0	0	0	0	0
Plant population (plants/acre)	1,700,186	1,680,100	1,585,782	1,552,002	1,661,174
Percent acres tested for primary nutrients	22	24	25	21	24
Percent acres tested for nitrogen	20	23	24	19	22
Percent acres receiving any fertilizer Applications	91	81	72	81	80
Percent acres with nitrogen applications	91	81	72	80	80
Average nitrogen application rate (lb./ac.)	65	64	49	76	62
Percent acres using a nitrogen stabilizer	1	2	1	7	2
Percent acres with phosphate applications	60	54	50	70	55
Average phosphate application rate (lb./ac.)	33	37	30	50	42
Percent acres with potash applications	17	22	12	37	20
Average potash application rate (lb./ac.)	29	43	38	67	42
Percent acres with lime applications	3	1	1	6	1
Percent acres with sulphur applications	10	7	6	17	7
Percent acres with micro nutrient applications	1	1	1	4	1
Percent acres with manure applied	1	4	3	4	3
Percent acres treated with herbicides	51	46	63	54	50
Percent acres treated with insecticides	10	6	6	0	6
Percent acres treated with fungicides	2	1	1	5	1
Average number of pesticide treatments	.67	.62	.83	.69	.67

Cropping practices used on major field crops by tillage system, 1991--continued

Data item	Conventional with moldboard plow	Conventional without moldboard plow	Mulch >30% residue	Ridge and no-till systems	Total
Cotton:					
Planted acres (1,000)	2308	8,281	160	111	10,860
Percent acres irrigated	50	41	73	68	44
Average number of tillage operations through planting	6.4	6.2	2.8	1.0	6.1
Percent of previous crop residue remaining on at planting	*	2	50	54	3
Average number of field cultivations for weed control	2.96	3.38	3.8	2.85	3.29
Plant population (plants/acre)	46359	42,984	41,268	52,164	43,748
Percent acres tested for primary nutrient	24	35	22	64	33
Percent acres tested for nitrogen	23	31	7	24	29
Percent acres receiving any fertilizer applications	84	31	7	24	82
Percent acres with nitrogen applications	84	80	100	100	81
Average nitrogen application rate (lb./ac.)	84	93	75	86	91
Percent acres with phosphate applications	62	49	66	95	53
Average phosphorus application rate (lb./ac.)	44	46	49	71	46
Percent acres with potash applications	31	35	51	64	34
Average potash application rate (lb./ac.)	29	53	33	80	48
Percent acres with lime applications	2	2	0	8	2
Percent acres with sulphur applications	24	19	66	40	21
Percent acres with micro nutrient applications	11	20	44	5	18
Percent acres with manure applied	2	3	0	0	3
Percent acres treated with herbicides	96	90	100	100	92
Percent acres treated with insecticides	48	70	78	64	65
Percent acres treated with fungicides	2	6	0	0	5
Average number of pesticide applications	3.70	5.48	4.68	7.46	5.11

* represents less than 1 percent of the acres.

1/ The following States are included in the Cropping Practices Surveys: Corn: GA, IL, IN, IA, KS, KY, MI, MN, MO, NE, NC, OH, PA, SC, SD, TX, and WI. Sorghum: KS, NE, and TX. Soybeans: AR, GA, IL, IN, IA, KS, KY, LA, MN, MS, MO, NE, NC, OH, SD, and TN. Cotton: AZ, AR, CA, LA, MS, and TX. Wheat: AR, CO, ID, IL, IN, KS, MN, MO, MT, NE, ND, OH, OK, OR, SD, TX, and WA.

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Economic Research Service
U.S. Department of Agriculture
1301 New York Avenue, N.W., Room 524
Washington, DC 20005-4788